BCAS OBSERVING HIGHLIGHTS for July 2 to 17, 2025, a "bright Moon period"
Black Canyon Astronomical Society (BCAS), western Colorado, USA

SUMMARY.

Enjoy seeing 5 bright planets in our skies and watch the first quarter Moon wax to full and then wane to last quarter during this "bright Moon" period. The Moon reaches first quarter on July 2, and from July 3 to 9, we can watch the gibbous Moon wax. The Moon is full on July 10, and from July 11 to 16, the gibbous Moon wanes. The Moon reaches last quarter on July 17. On the night of July 15-16 at around midnight, watch the 69%-illuminated, gibbous Moon rise just 2 degrees from Saturn. With binoculars or telescopes, explore the gibbous Moon by viewing dark, lava-flooded, lunar "seas" ("maria" in Latin) and bright, relatively young "ray craters."

We celebrate Independence Day on July 4, and on July 3 we can celebrate "aphelion day", when Earth is farthest from the Sun during year 2025 (94.48 million miles vs. a mean distance of 92.95 million miles)! That's correct: Earth is farthest from the Sun during early summer in the northern hemisphere (see accompanying PDF file for an explanation).

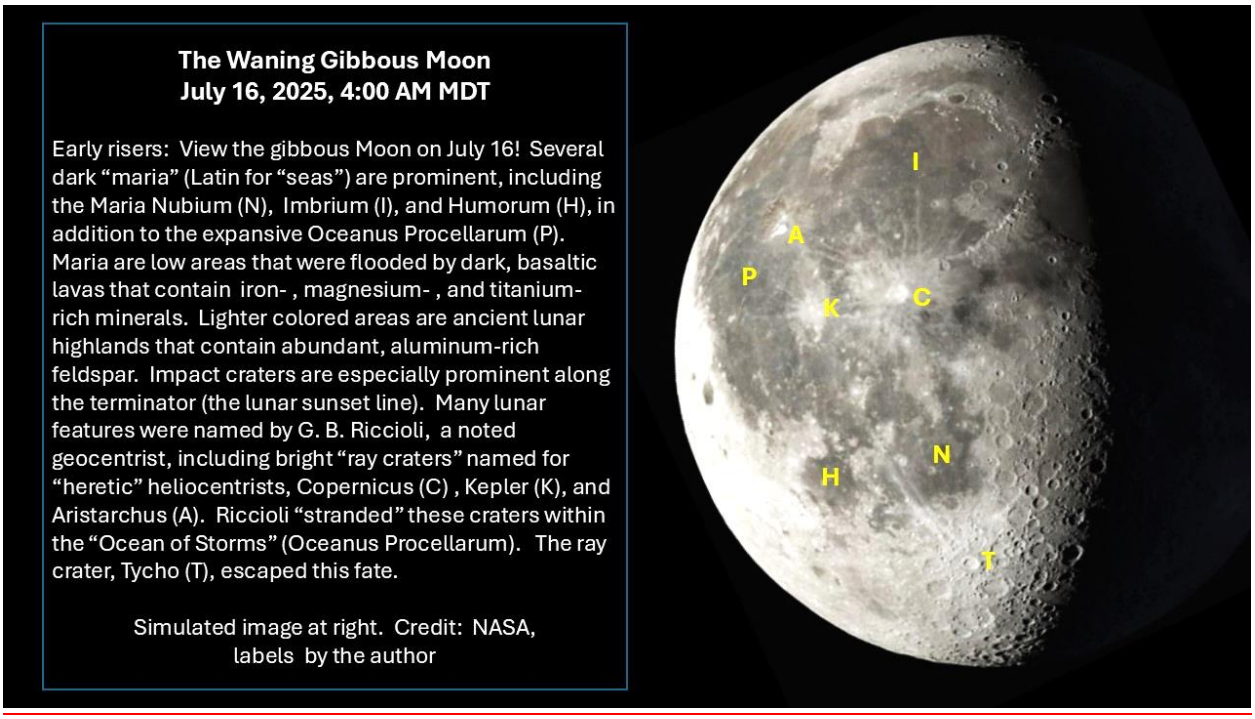
From the Western Slope on July 2, between about 9:36 PM to 9:50 PM MDT, you may be able to see Mercury shining at magnitude +0.46, as it descends from 6 to 3 degrees above an unobstructed, west-northwestern horizon (binoculars may help). At about 9:50 PM MDT on July 2, try to spot the Beehive Star Cluster (M44) about a degree above Mercury (this could be challenging, use binoculars!). Mercury fades to magnitude +0.9 by July 10 and then moves rapidly westward while fading further, disappearing into glaring evening twilight before its solar conjunction on July 31. As twilight fades, Mars, shining at magnitude +1.5, is about 20 degrees above the western horizon, and the Red Planet remains visible through the early evening, setting in the west after 11 PM MDT. Saturn (at magnitude +0.9) rises in the east around midnight and remains visible into predawn twilight. On the morning of July 2, use a telescope to watch a total solar eclipse on the Ringed Planet, as Titan, Saturn's largest moon, casts its shadow on Saturn starting at 1:40 AM MDT. The rising Sun compromises our view of Titan's shadow by 5:49 AM MDT. Venus, shining at magnitude -4.1 is still a brilliant "morning star", rising in the east-northeast before 3:30 AM MDT. By July 12 at about 5:17 AM MDT, you may be able to spot Jupiter (at magnitude -1.9) about 3 degrees above an unobstructed, east-northeastern horizon, as the Giant Planet emerges from its solar conjunction of June 24.

As of July 1, many active regions with sunspots are present on the Earth-facing side of the Sun, and we may experience more solar flares and coronal mass ejections during this period. Please don't view the Sun without proper eye protection, as serious eye damage can result. Monitor the Sun safely and in "real-time" on the internet. Mass ejections from the Sun's corona may trigger auroras that could become visible from the Western Slope.

Look for predawn passes of the very bright International Space Station (ISS) from July 2 to 6 and both predawn and evening ISS passes from July 7 to 17. Multiple ISS passes are predicted for the mornings of July 3, 4, 5, and 6 and through many nights from July 7 to 17. There are predicted predawn passes of the almost-as-bright Tiangong (Chinese) Space Station from July 2 to July 15 (with multiple passes on some mornings). Evening passes of Tiangong are predicted for July 15 to 17.

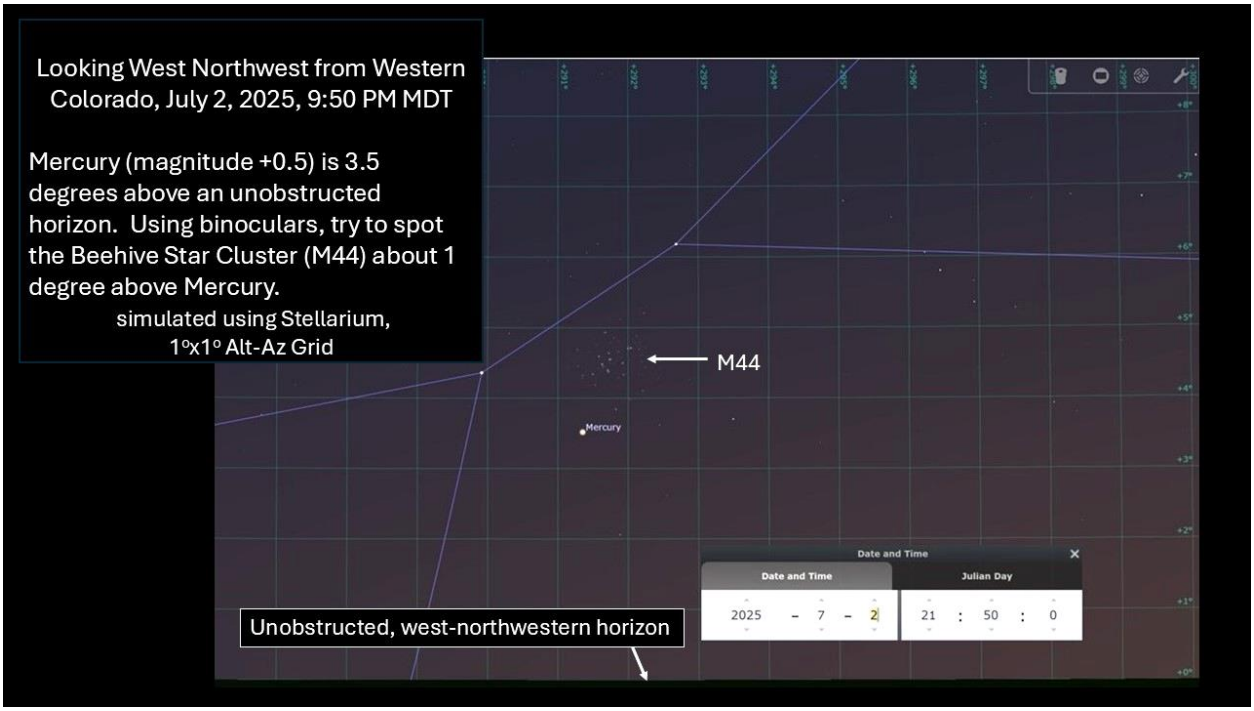
THE MOON. The Moon reaches **first quarter on July 2** (exactly at 1:30 PM MDT). From July 3 to July 9, watch the gibbous Moon wax. **The Moon is full on July 10** (exactly full at 2:37 PM MDT). From July 11 to 16, the gibbous Moon wanes. The Moon reaches **last quarter on July 17** (exactly at 6:38 PM MDT). On the night of July 15-16 at around midnight, watch the 69%-illuminated, waning gibbous Moon rise just 2 degrees above Saturn. NASA has published a stunning visualization of lunar phases for year 2025. Another fun site is NASA's daily Moon guide. With binoculars or a telescope, view the waning, gibbous

Moon between July 11 and 16 (to navigate, you can use the chart below). Dark lunar maria (Latin for "seas") are easily visible in binoculars, and even with eyes unaided. Maria are low areas that were flooded by dark, basaltic lavas. Telescopes reveal many impact craters, including relatively young "ray craters" like Tycho, Copernicus, Kepler, and Aristarchus. Bright "rays" consist of materials ejected from these craters as they formed from impacting asteroids and comets.



EARTH FARTHEST FROM THE SUN – JULY 3. Earth is farthest from the Sun ("at aphelion") on July 3 (94.48 million miles vs. a mean distance of 92.95 million miles). Can you feel the cold? Probably not, unless you are reading this from Earth's southern hemisphere! Our seasons are related to the pronounced 23° 26' tilt of Earth's rotation axis to its orbital plane, and not to Earth's varying distances from the Sun, which are relatively small.

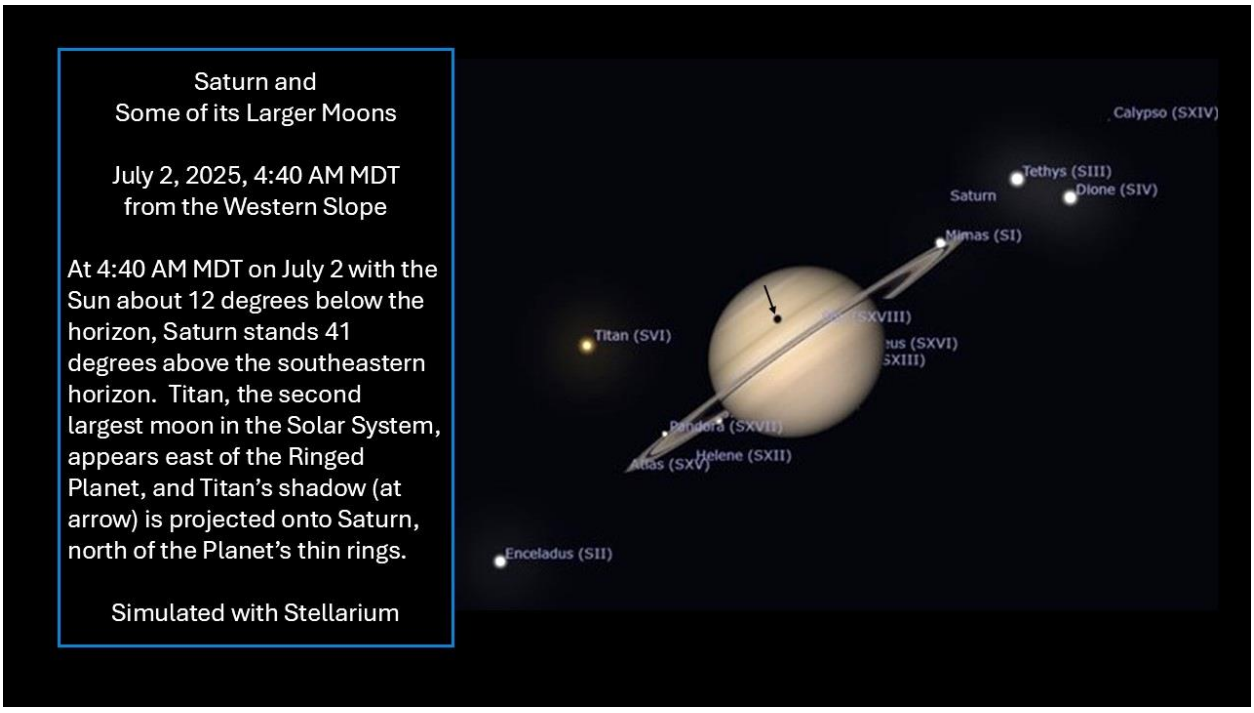
MERCURY FADES, THEN DISAPPEARS INTO GLARING EVENING TWILIGHT. From the Western Slope on July 2, between about 9:36 PM to 9:50 PM MDT, you may be able to spot Mercury shining at magnitude +0.46, as it descends from 6 to 3 degrees above a flat, west-northwestern horizon (binoculars may help). On July 2, find a spot that has an unobstructed west-northwestern horizon and look for Mercury with binoculars at about 9:50 PM MDT (with the Sun 12 degrees below the horizon): You may be able to see stars of the famous Beehive Star Cluster (aka M44) about 5 degrees above the horizon and a degree above Mercury (this could be challenging - see chart below). By July 10, the Innermost planet fades to magnitude +0.9 and gets difficult to spot in glaring evening twilight. After July 10, while continuing to fade, Mercury retrogrades (moves westward) toward its inferior solar conjunction on July 31. Mercury's distance from Earth decreases from 79 million miles on July 2 to 68 million miles on July 10. When at inferior solar conjunction on July 31, Mercury will be only 55 million miles distant, but invisible in the Sun's glare. As seen through telescopes, Mercury's crescent phase wanes from 43% illuminated on July 2 to 29% illuminated on July 10, as its apparent diameter increases from 7.9 to 9.2 arc seconds. **Please do your Mercury spotting after sunset. NEVER chance looking at the Sun without taking proper precautions. Serious eye damage can result.**



MARS IN THE EVENINGS. As twilight fades, **r**eddish (or butterscotch-tinted?) Mars is about 20 degrees above our western horizon. The Red Planet is moving eastward, amidst the stars of Leo. Mars' rapid eastward motion against the stars will keep the Red Planet in our evening sky through the middle of fall. Mars now sets before midnight, at about 11:42 PM MDT on July 2 and 11:04 PM MDT on July 17. The Red Planet shines at magnitude +1.5 during this period, as its distance from Earth increases from 180 million miles on July 2 to 189 million miles on July 17. Through telescopes, Mars' 93%- to 94%-illuminated, gibbous disk decreases from 4.8 to 4.6 arc seconds in diameter between July 2 and 17. Due to its small apparent size, it's now extremely challenging to spot features on the Red Planet. Find more info on observing Mars here:
https://www.alpo-astronomy.org/jbeish/2025_MARS.htm

SATURN RISES AROUND MIDNIGHT. Saturn is visible from around midnight into predawn twilight, rising in the east at about 12:42 AM MDT on July 2 and 11:39 PM MDT on July 17. Saturn brightens from magnitude +0.95 on July 2 to +0.87 on July 17, as its distance from Earth decreases from 870 million to 847 million miles. Through telescopes Saturn's disk appears 18 arc seconds wide, and its rings span 42 arc seconds. During 2025, Saturn's thin rings (150,000 miles wide but only 1000 ft thick!) are nearly "edge-on" from our perspective on Earth. Saturn's rings are not as striking as they have been in the past few years (and will be a few years from now). When seen nearly edge-on, the rings are dimmer, making it easier to spot some of Saturn's mid-sized moons, like Tethys, Dione, Rhea, and Enceladus. Titan, Saturn's largest moon, is bright enough to see with just binoculars. You can follow the changing positions of Saturn's moons by using various planetarium apps and/or visiting this site:
https://skyandtelescope.org/observing/interactive-sky-watching-tools/saturns-moons-javascript-utility/
For more info on the appearance of Saturn's rings in 2025 and phenomena associated with Saturn's moons, see this article…
https://skyandtelescope.org/astronomy-news/observing-news/see-mutual-events-close-approaches-of-saturns-moons/

TITAN'S SHADOW MOVES ACROSS SATURN – JULY 2, AM! Use a telescope to watch the rare sight of Titan's shadow moving across the Ringed Planet on the morning of July 2! This is a total solar eclipse on Saturn! Titan is Saturn's largest moon, and the second largest moon in the Solar System. Titan has a larger diameter than the Planet Mercury! The July 2 transit begins at 1:40 AM MDT, when Saturn is only 11 degrees above the eastern horizon on the Western Slope. But the Ringed Planet rises to more than 45 degrees above the southeastern horizon by 5:12 AM MDT, before the transit ends in daylight more than an hour after the Sun rises at 5:49 AM MDT. Locally, you might see Titan's shadow best between 3:25 AM and 5:15 AM MDT, when Saturn is 30 to 45 degrees above the southeastern horizon and before glaring twilight starts to interfere. On July 2, Titan's shadow is cast north of Saturn's thin rings (see simulation, below). Titan's orbital period of Saturn is just 1.5 hours short of 16 Earth days, so transits are now occurring every 16 days. After July 2, there will be six more transits of Titan's shadow in 2025 (see table, below). But after the transit on October 5-6, we will have to wait 15 years for the next group of Titan shadow transits! Through the summer, local circumstances for viewing Titan's shadow transits improve, because Saturn rises progressively earlier and gets higher in our sky before the Sun rises. Offsetting that favorable trend, clouds from our "southwest monsoon" may start to interfere by mid Jully. In addition to transit times, approximate times for Saturn's rise and sunrise on the Western Slope are shown in the table. Titan's shadow is large. But Saturn is on average about twice the distance of Jupiter. So, the size of Titan's shadow appears roughly the same size as the shadow of Jupiter's moon, Europa, which is smaller than Titan.



Transits of Titan's shadow across Saturn						
Date UTC	**Date MDT**	**start MDT**	**middle MDT**	**end MDT**	**Saturn rises MDT**	**Sunrise MDT**
7/2/2025	7/2/2025	1:40 AM	4:35 AM	7:03 AM	12:42 AM	5:49 AM
7/18/2025	7/18/2025	1:00 AM	3:44 AM	6:05 AM	17Jul, 11:39 PM	6:03 AM
8/3/2025	8/3/2025	12:25 AM	2:52 AM	5:04 AM	2Aug, 10:36 PM	6:13 AM
8/19/2025	8/18-19/2025	11:52 PM	2:01 AM	4:00 AM	18Aug, 8:26 PM	NA
9/4/2025	9/3-4/2025	11:25 PM	1:09 AM	2:50 AM	3Sep, 8:26 PM	NA
9/20/2025	9/19-20/2025	11:09 PM	12:20 AM	1:34 AM	19Sep, 7:21 PM	NA
10/6/2025	10/5/2025		11:32 PM		NA	NA
transit times from Sky & Telescope (converted to MDT by author)						
times for local Saturn rise and sunrise from Stellarium						

Find more info on Titan shadow transits at this link…
https://skyandtelescope.org/astronomy-news/observing-news/titan-shadow-transit-season-underway/

VENUS – STILL A BRILLIANT "MORNING STAR"! Brilliant Venus rises at about 3:12 AM MDT on July 2 and 3:10 AM MDT on July 17, before the start of morning twilight. Venus' greatest angular separation west of the Sun occurred on May 31, and our Sister Planet's apparent distance from the Sun is now decreasing. But, locally, "Venus-rise" times change very little during this period, due to the marked northward component of Venus' current northeastward motion against the stars. Between July 2 and 17, brilliant Venus fades just slightly, from magnitude -4.14 to -4.05, as its distance from Earth increases from 88 million to 99 million miles. As seen through telescopes, Venus' gibbous phase waxes from 64% illuminated on July 2 to 70% illuminated on July 17, as its apparent diameter shrinks from 17.6 to 15.7 arc seconds. **Please do your Venus spotting before sunrise. NEVER chance looking at the Sun without taking proper precautions. Serious eye damage can result.**

JUPITER REAPPEARS IN PREDAWN TWILIGHT. After its solar conjunction on June 24, Jupiter is reappearing in morning twilight. If you can find a place with an unobstructed east-northeastern horizon, you may be able to spot -1.9 magnitude Jupiter in bright twilight as early as July 12 at about 5:17 AM MDT, when the Giant Planet is 3 degrees above an unobstructed horizon with the Sun 7 degrees below that horizon. Jupiter gets easier to spot by July 17 at about 5:14 AM MDT, when it appears 5 degrees above a flat horizon when the Sun is still 8 degrees below the horizon. Jupiter is 569 million miles distant on July 17. Jupiter will get much easier to observe in the following weeks and months. **Please do your Jupiter spotting before sunrise. NEVER chance looking at the Sun without taking proper precautions. Serious eye damage can result.**

DON'T GIVE UP! KEEP WATCHING THE NORTHERN CROWN! Better late than never? Will there soon be a bright "new" star in Constellation Corona Borealis (the "Northern Crown"), at least briefly? During this period, Corona Borealis is just south of the zenith at end of evening twilight and sets below the west-northwestern horizon during morning twilight. T Coronae Borealis (T CrB) is a recurrent nova that (based on past behavior) may rapidly increase in brightness 1500-fold (to second magnitude) to become the brightest star (or 2nd brightest star) in Corona Borealis between now and sometime in 2026. Then this "new star" may fade rapidly below naked-eye visibility in about a week. As of early on July 1, T CrB had not yet erupted. Astronomer Jean Schneider of Paris Observatory states that eruptions are most likely every 228 days, a period corresponding with the orbital period of T CrB's red giant and white dwarf components. Schneider suggests that the eruption may be likely around November 10, 2025 or June 25, 2026. For more about T CrB, read the article, "Get Ready for a Nova's Bright Return", by astronomer

Brad Schaefer in the March 2024 issue of Sky & Telescopes Magazine, p. 34-40. You can find additional info at these sites…
https://blogs.nasa.gov/Watch_the_Skies/2024/02/27/view-nova-explosion-new-star-in-northern-crown/
https://skyandtelescope.org/astronomy-news/is-the-blaze-star-about-to-blow-you-may-be-the-first-to-know/
https://ui.adsabs.harvard.edu/abs/2023ATel16107....1S/abstract
https://www.aanda.org/articles/aa/full_html/2023/12/aa48372-23/aa48372-23.html

THE SUN. The Sun has been very interesting lately, as solar active regions containing sunspots have unleashed numerous flares and coronal mass ejections (CMEs) of charged particles. There have been M-class (moderate) solar flares during recent weeks, and there have been X-class (extreme) solar flares on May 13, 14, 25, June 17 and 19. Also, there have been CMEs that have triggered geomagnetic storms that caused auroras. As of 7 AM MDT on July 1, there are many active regions containing sunspots on the Earth-facing side of the Sun. We may experience more M- and possibly X-class flares and powerful CMEs during the current period. Airglow and SAR arcs also result from high solar activity, and these phenomena have been photographed and/or observed from Colorado. The safest way to monitor sunspots, solar flares, CMEs, and other solar activity safely and in "real time" is by using the internet. Check out the following sites…
https://sdo.gsfc.nasa.gov/data/
https://stereo.gsfc.nasa.gov/beacon/
http://halpha.nso.edu/
https://www.swpc.noaa.gov/
https://sohowww.nascom.nasa.gov/data/realtime-images.html
http://www.sidc.be/silso/ssngraphics
Do not look at the Sun directly without safe, specialized solar filters. Looking at the Sun can be very dangerous unless you take adequate precautions. Severe eye damage and even blindness can result.

AURORAS (aka "polar lights" or "northern lights"). Many people in Colorado observed and photographed a strong aurora on the night of May 31-June 1. BCAS member, Aaron Watson, captured a wonderful time-lapse sequence of this display from near Paonia, Colorado. Auroras are triggered by geomagnetic storms that derive from coronal mass ejections (CME) from active regions on the Sun. With continuing high solar activity, more geomagnetic storms may occur, and we may be able to see more auroras. You can get predictions and updates for auroras, their intensity, and geographic extent from NOAA's Space Weather Prediction Center:
https://www.swpc.noaa.gov/products/aurora-viewline-tonight-and-tomorrow-night-experimental
Auroras are most frequently seen from high latitudes, e.g., from Canada, Alaska, Iceland, northernmost Europe, southern New Zealand, and Antarctica. But, during late spring and early summer (in respective hemispheres), it's not possible to see auroras from latitudes above 60 degrees, because it never gets dark there!

EARTH SATELLITE HIGHLIGHTS. The following predictions are for western Colorado, specifically Montrose. Numerous Earth satellites are visible every clear night. Satellites are visible when they reflect sunlight during twilight or nighttime hours. During May through July, space above Earth's northern reaches is awash in sunlight, and it's possible to see satellites all night long, especially in the northern sky. Brighter satellites have smaller magnitude numbers, and the brightest (e.g., the International and Chinese Tiangong Space Stations) may have negative magnitudes. These predictions are for selected passes of some bright and/or interesting satellites (as summarized from heavens-

above.com). Satellite orbits change and these predictions may be inaccurate. This is especially true for the International Space Station (ISS) and the Tiangong Space Station, because they undergo frequent orbital changes. We do not show satellite predictions more than 5 days beyond the distribution date of the current "BCAS Observing Highlights" edition. For accurate predictions of the ISS, Tiangong, and other satellites, check heavens-above.com or other satellite prediction sites for updates on the nights you wish to observe. Be sure to set application(s) for your location and time zone.

July 2, 2025. International Space Station (ISS). 2:38 to 2:40 to 2:41 AM MDT. NW to NNW to N. Max altitude 12 deg above NNW, max magnitude -0.7 (Passing through Ursa Major-Big Dipper, Camelopardalis, and Auriga). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 2, 2025. Tiangong (Chinese Space Station). 4:42 to 4:43 to 4:46 AM MDT. SSW to SSE to E. Appears from Earth's shadow 18 deg above SSW, max altitude 30 deg above SSE, max magnitude -0.9 (Passing through Capricornus/Piscis Austrinus, Cetus, and Taurus). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

July 3, 2025. International Space Station (ISS). 1:51 to 1:53 AM MDT. 1st AM ISS pass of July 3. NNW to NNE. Appears from Earth's shadow near max altitude 15 deg above NNW, max magnitude -0.9 (Passing through Ursa Major, Camelopardalis, and Perseus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 3, 2025. Tiangong (Chinese Space Station). 3:46 to 3:48 AM MDT. 1st AM Tiangong pass of July 3. SE to E. Appears from Earth's shadow at max altitude 17 deg above SE, max magnitude +0.1 (Passing through Cetus). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

July 3, 2025. International Space Station (ISS). 5:05 to 5:07 to 5:09 AM MDT. 2nd AM ISS pass of July 3. NNW to NNE to NE. Max altitude 15 deg above NNW, max magnitude -0.7 (Passing through Ursa Major-Big Dipper, Camelopardalis, Auriga, and Taurus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 3, 2025. Tiangong (Chinese Space Station). 5:18 to 5:22 to 5:25 AM MDT. 2nd AM Tiangong pass of July 3. WSW to SSE to ENE. Max altitude 87 deg above SSE, max magnitude -2.1 (Passing through Aquila, Cygnus/Pegasus, Andromeda, Perseus, and Taurus). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

July 4, 2025. International Space Station (ISS). 1:03 to 1:05 AM MDT. 1st AM ISS pass of July 4. N to NNE. Appears from Earth's shadow at max altitude 18 deg above N, max magnitude -0.9 (Passing through Camelopardalis and Perseus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 4, 2025. International Space Station (ISS). 4:17 to 4:18 to 4:19 AM MDT. 2nd AM ISS pass of July 4. N to NNE to NE. Max altitude 12 deg above NNE, max magnitude -0.4 (Passing through Ursa Major-Big Dipper, Camelopardalis and Auriga). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 4, 2025. Tiangong (Chinese Space Station). 4:22 to 4:24 to 4:27 AM MDT. SW to SSE to ENE. Appears from Earth Shadow 34 deg above SW, max altitude 55 deg above SSE, max magnitude -1.9 (Passing through Aquarius, Pegasus/Pisces, Aries, and Taurus-near Venus). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

July 5, 2025. International Space Station (ISS). 12:15 to 12:16 AM MDT. 1st AM ISS pass of July 5. In NNE. Appears from Earth's shadow at max altitude 17 deg above NNE, max magnitude -1.1 (Passing through Cassiopeia/Perseus and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 5, 2025. International Space Station (ISS). 1:50 to 1:51 to 1:52 AM MDT. 2nd AM ISS pass of July 5. NNW to N. Max altitude 10 deg above NNW, max magnitude -0.3 (Passing through Ursa Major, Camelopardalis, and Perseus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 5, 2025. Tiangong (Chinese Space Station). 3:27 to 3:28 AM MDT. 1st AM Tiangong pass of July 5. ESE to E. Appears from Earth's shadow at max altitude 22 deg above ESE, max magnitude -0.1 (Passing through Pisces and Cetus). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

July 5, 2025. Tiangong (Chinese Space Station). 4:59 to 5:02 to 5:05 AM MDT. 2nd AM Tiangong pass of July 5. W to NNW to ENE**.** Appears from Earth's shadow 10 deg above W, max altitude 64 deg above NNW, max magnitude -1.8 (Passing through Ophiuchus, Lyra, Cygnus, Cepheus, Cassiopeia, Perseus, and Taurus). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

July 5, 2025. International Space Station (ISS). 5:04 to 5:06 to 5:09 AM MDT. 3rd AM ISS pass of July 5. NNW to NNE to E. Max altitude 26 deg above NNE, max magnitude -1.3 (Passing through Draco/Ursa Major, Camelopardalis, Auriga, and Taurus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 5, 2025. International Space Station (ISS). 11:26 to 11:28 PM MDT. 1st ISS pass of July 5-6. NNE to NE. Appears from Earth's shadow at max altitude 24 deg above NNE, max magnitude -1.8 (Passing through Cassiopeia and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 6, 2025. International Space Station (ISS). 1:00 to 1:02 to 1:03 AM MDT. 2nd ISS pass of July 5-6. NW to NNW to N. Max altitude 13 deg above NNW, max magnitude -0.4 (Passing through Ursa Major, Camelopardalis, and Perseus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 6, 2025. Tiangong (Chinese Space Station). 4:03 to 4:04 to 4:07 AM MDT. WSW to NNW to ENE**.** Appears from Earth's shadow 56 deg above WSW, max altitude 88 deg above NNW, max magnitude -2.2 (Passing through Cygnus, Lacerta, Andromeda, Triangulum, and Taurus). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

July 6, 2025. International Space Station (ISS). 4:15 to 4:18 to 4:20 AM MDT. 3rd ISS pass of July 5-6. NNW to NNE to ENE. Max altitude 18 deg above NNE, max magnitude -0.7 (Passing through Ursa Major-

Big Dipper, Camelopardalis, Auriga, and Taurus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

July 6, 2025. International Space Station (ISS). 10:32 to 10:36 to 10:39 PM MDT. SW to SSE to NE. Max altitude 89 deg above SSE, max magnitude -3.9 (Passing through Virgo-near Spica, Boötes, Corona Borealis, Hercules, Cygnus/Draco, Lacerta, and Pegasus/Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

Additional passes of the very bright International Space Station (ISS) are predicted from July 7 to 17, including multiple passes on many nights. And additional predawn passes of the bright Tiangong (Chinese) Space Station are predicted for July 7 to 15 (with multiple passes on some mornings), and evening passes of Tiangong are predicted for July 15 to 17. These predictions are subject to change. For updates on times, check heavens-above (or other prediction websites) shortly before you want to observe. Be sure to enter your location and time zone info when using prediction websites.

Note: The apparent brightness of sky objects is measured in "magnitude" units. Many bright stars are magnitude +1, while the faintest stars easily visible to unaided eyes under dark skies are magnitude +6. Some of the brightest stars are 0 magnitude (e.g., Vega, Arcturus), while the brightest sky objects have negative magnitudes (e.g., Sirius at -1.5, Jupiter at -2 to -3, Venus at -4 to -5, the full Moon at -12 to -13, and the Sun at -26.7 magnitude). Angular distances on the sky are usually cited in degrees of arc. Helpful ways to estimate 1, 5, 10, 15, and 25 degrees of arc can be found here: https://www.timeanddate.com/astronomy/measuring-the-sky-by-hand.html

WESTERN SLOPE SKIES. Since 2011, KVNF Community Radio has aired Western Slope Skies (WSS), a biweekly astronomy feature, every two weeks on Friday mornings and on the following Wednesday evenings. On July 4 and 9, BCAS member Bryan Cashion presents on "The Legacy of Vera Rubin", an American astronomer.

HAPPY OBSERVING!